

## **AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions, and listings, of claims in the application:

### **Listing of Claims:**

1. (Currently Amended) A method for efficient frontier supplementation in multi-objective portfolio analysis, the method comprising:

generating a non-dominated solution set comprising a first efficient frontier in a portfolio performance space having at least three-dimensions using one of an evolutionary algorithm and optimization processing by using a computing device;

identifying at least one region having a gap in the at least three-dimensions of the first efficient frontier using a visualization tool;

interactively placing at least one target in the at least one region using the visualization tool; and

generating supplemental solutions to the first efficient frontier using a Target Objectives Genetic Algorithm (TOGA) to create a second efficient frontier, the second efficient frontier being used in investment decisions.

2-4. (Canceled)

5. (Currently Amended) The method of claim 1, further including the step of selecting at least one portfolio from the second efficient frontier.

6. (Currently Amended) The method of claim 1, wherein the TOGA further includes the steps of:

accepting a set of target vectors; and

generating a series of chromosomes, evaluated on the basis of the accepted target vectors, over multiple generations.

7. (Currently Amended) The method of claim 6, wherein the TOGA further includes the step of evaluating a fitness of each chromosome until a population with an acceptable fitness is determined so as to fill in the gap.

8-12. (Canceled)

13. (Currently Amended) The method of claim 1, wherein the gap is a region that is sparsely populated by possible solutions.

14. (Canceled)

15. (Currently Amended) A system for efficient frontier supplementation in multi-objective portfolio analysis, the system comprising:

an efficient frontier generation portion that generates a non-dominated solution set comprising a first efficient frontier in a portfolio performance space having at least three-dimensions using one of an evolutionary algorithm and optimization processing;

a visualization tool by which a user identifies at least one region having a gap in the at least three-dimensions of the first efficient frontier and interactively places at least one target in the at least one region; and

a gap filling portion that generates supplemental solutions to the first efficient frontier using a Target Objectives Genetic Algorithm (TOGA) to create a second efficient frontier, the second efficient frontier being used in investment decisions.

16-18. (Canceled)

19. (Currently Amended) The system of claim 15, wherein the gap filling portion selects at least one portfolio from the second efficient frontier.

20. (Currently Amended) The system of claim 15, wherein the TOGA further includes:

accepting a set of target vectors; and

generating a series of chromosomes, based on the accepted target vectors, over multiple generations.

21. (Currently Amended) The system of claim 20, wherein the TOGA further includes evaluating a fitness of each chromosome until a population with an acceptable fitness is determined so as to fill in the gap.

22. (Canceled)

23. (Currently Amended) A computer readable medium for efficient frontier supplementation in multi-objective portfolio analysis, the computer readable medium comprising:

a first portion that generates a non-dominated solution set comprising a first efficient frontier in a portfolio performance space having at least three-dimensions using one of an evolutionary algorithm and optimization processing;

a visualization tool by which a user identifies at least one region having a gap in the at least three-dimensions of the first efficient frontier and interactively places at least one target in the at least one region; and

a second portion that generates supplemental solutions to the first efficient frontier using a Target Objectives Genetic Algorithm (TOGA) to create a second efficient frontier, the second efficient frontier being used in investment decisions..

24. (Canceled)